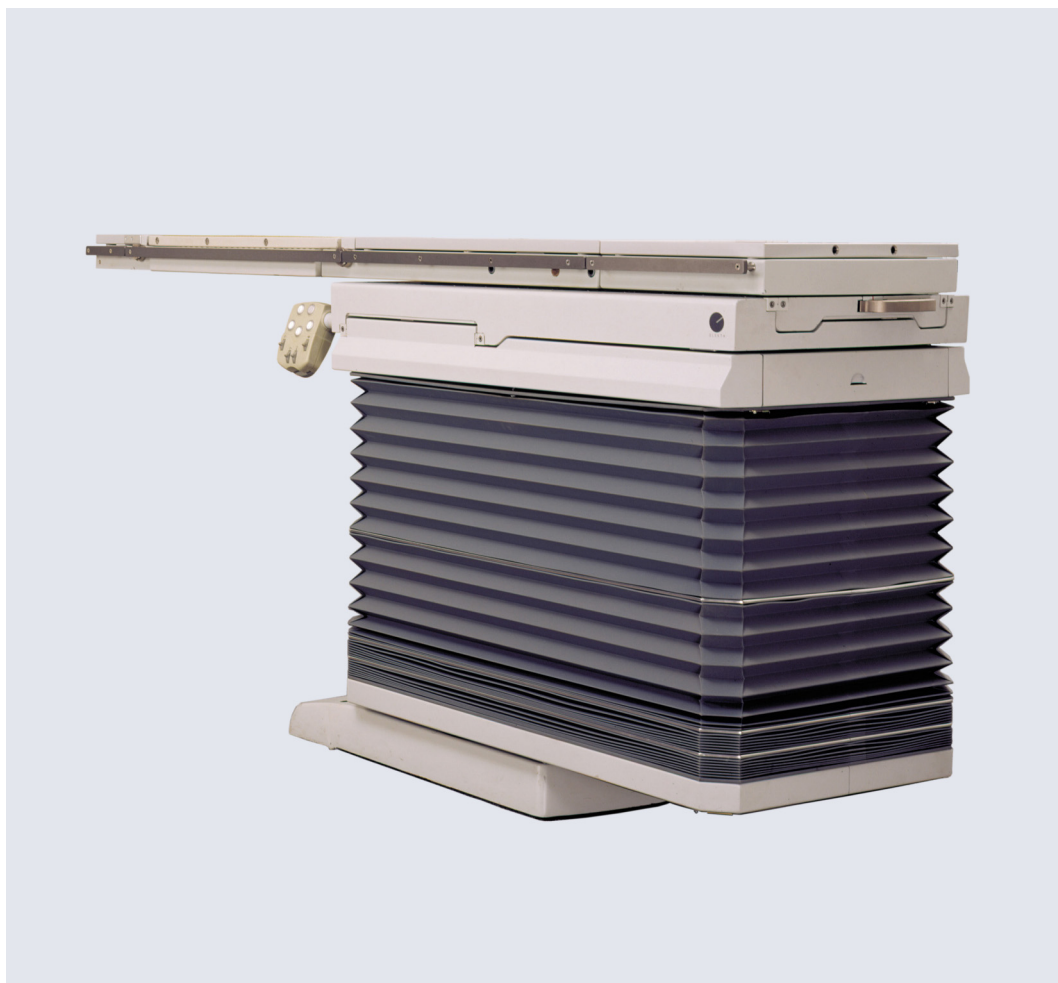


Precise Table



User's Manual

4513 370 1860 06



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Amendment Record

When an amendment is incorporated in this publication, enter its number and the date of incorporation, then sign your name alongside.

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1 Introduction

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1.1 About This Manual

This manual is intended to assist users in the safe and effective operation of the equipment described. The user includes the body with authority over the equipment and those persons who actually handle the equipment.

Before attempting to work with this equipment the user must read, understand, note and strictly observe all:

- **warnings**
- **cautions**
- **release notes** (delivered with the software media pack)

Pay special attention to all the information given, and procedures described, in [Section 1.7](#) Safety.

The documentation must be kept with the system for easy reference.

The most extensive configuration is described within this manual, including the maximum number of options and accessories. Not every function, option or accessory described may have been purchased or licensed on a particular piece of equipment.

Examples

To aid the understanding of the contents in this manual, examples of patient, physician and hospital names may be used. These names are fictitious and any resemblance to person(s) and/or organization(s) is entirely coincidental.

1.1.1 Warnings, Cautions and Notes

The following are samples of how *warnings*, *cautions* and *notes* will appear throughout this document. The text within the samples explains their intended use.



WARNING x

Warnings are directions which, if not followed, could constitute a health hazard or cause injury, including fatal or serious injury, or could lead to clinical mistreatment.



CAUTION x

Cautions are directions which, if not followed, could cause damage to the equipment described in this manual, and/or any other equipment or goods, and/or could cause environmental damage.

Note:

Notes provide advice and highlight unusual points. A note is not intended as an instruction.

1.1.2 Intended Audience

This manual is written for trained users of Precise Table and for Elekta[®] field service personnel.

1.1.3 Disclaimer

Elekta[®] assumes no liability for use of this document if any unauthorized changes to the content or format have been made.

Every care has been taken to ensure the accuracy of the information in this document. However, Elekta[®] assumes no responsibility or liability for errors, inaccuracies, or omissions that may appear in this document.

Elekta[®] reserves the right to change the product without further notice to improve reliability, function or design.

This manual is provided without warranty of any kind, either implied or expressed, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

1.2 Intended Use

The Precise Table supplied by Elekta is intended as a universal patient treatment support and positioning table for radiation therapy and simulation use. It is for use with existing Elekta[®] digital accelerators and simulators and adaptable to third party radiotherapy products. It should be installed, used and operated only in accordance with the safety procedures given within this manual. Nothing stated in this manual reduces the user's professional responsibilities for sound judgement and best practice.

Installation, use and operation of this equipment is subject to the law in the jurisdictions in which the equipment is being used. Users shall only install, use and operate the equipment in such ways that do not conflict with applicable laws or regulations which have the force of law.

Use of the equipment for purposes other than those intended and expressly stated by the manufacturer, as well as incorrect use or operation, may relieve the manufacturer or his agent from all or some of the responsibility for resultant non-compliance, damage or injury..



In the United States, Federal law restricts this device to sale, distribution, and use by or on order of a licensed physician.

1.3 Compatibility

Equipment described in this manual shall only be used in combination with other equipment or components if these are expressly recognized by Elekta[®] as compatible. A list of such equipment and components is available from Elekta[®] on request.

The use of accessories, transducers, and cables other than those specified by Elekta® may result in increased emissions or decreased immunity of the equipment.

Changes and/or additions to the equipment shall only be carried out by persons expressly authorized to do so by Elekta®. Such changes shall comply with best engineering practice and all applicable laws and regulations that have the force of law within the jurisdiction.



WARNING 1

Changes, additions or maintenance to the equipment carried out by persons without appropriate qualifications and training and/or using unapproved spare parts may lead to fatal or serious personal injury and/or damage to the equipment as well as making the warranty void.

1.4 Compliance

Note: The Precise Table has been designed and tested for compliance when used in the Clinical mode only.

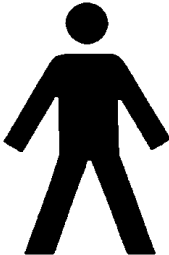
Precise Table is designed to comply with internationally recognized standards for safety and performance.

1.4.1 IEC Safety Standards

- Precise Table complies with the following IEC Safety Standards:
- IEC 60601-1 Medical electrical equipment, Part 1: General requirements for safety.
 - IEC 60601-2-1 (including Amendment 1) Safety of Medical Electrical Equipment: Particular requirements for medical electron accelerators in the range 1 MeV to 50 MeV. Section One: General Section. Section 2: Radiation Safety for Equipment.

1.4.2 IEC Classification

According to IEC 60601-2-1 Precise Table is classified as set out in the table below:

Type of protection against electric shock	CLASS 1 EQUIPMENT
Degree of protection against electric shock	TYPE B APPLIED PARTS 

Degree of protection against ingress of liquids	IPX0 as defined in IEC 60529. Ordinary equipment (enclosed equipment without protection against ingress of liquids)
Methods of disinfection recommended by the manufacturer	Disinfectable equipment (or elements). See 'Accompanying Documentation' for methods
Degree of safety of application in the presence of flammable anesthetic mixture with air or with oxygen or with nitrous oxide	Equipment NOT suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen, or nitrous oxide
Mode of operation	Suitable for continuous operation

1.5 Training

Users of the Precise Table shall have received adequate training on its safe and effective use before attempting to work with it.

Training requirements may vary from country to country. The user shall make sure that training is received in accordance with local laws or regulations that have the force of law. Information on training is available from the local Elekta[®] representative.

1.6 Accompanying Documentation

This manual forms part of the accompanying documentation set for this product. The complete sets of documents are listed in [Table 1.1](#) (Elekta Precise Treatment System™, Elekta SLS Simulator and Elekta Synergy™ Platform) and in [Table 1.2](#) (when used with Elekta PreciseSIM™)

Table 1.1 Manual Set 4513 370 3951

Manual Set: 4513 370 3951	
Publication Title	Publication No.
Precise Table User's Manual	4513 370 1860
Precise Table Installation Manual	4513 370 1861
Precise Table Corrective Maintenance Manual	4513 370 1862
Precise Table Customer Acceptance Tests	4513 370 1863
Precise Table Preventative Maintenance Manual	4513 370 1864

Table 1.2 Manual Set 4513 341 3003

Manual Set: 4513 341 3003	
Publication Title	Publication No.
Precise Table Installation Manual	4513 370 1861
Precise Table Corrective Maintenance Manual	4513 370 1862
PreciseSIM™ Users Manual	4513 370 1910
PreciseSIM™ Installation Manual	4513 370 1918
PreciseSIM™ Service Manual	4513 370 1919
PreciseSIM™ QA Manual	4513 370 1920
PreciseSIM™ Customer Acceptance Tests	4513 370 1921
Installation Log Book	4513 370 3640

1.7 Safety

Every reasonable precaution has been taken during manufacture to safeguard the health and safety of persons who will operate this system. The precautions in the following sections must be observed at all times.

1.7.1 Important Safety Directions

Elekta® products are designed to meet stringent safety standards. All medical electrical equipment requires proper installation, operation, and maintenance (particularly with regard to safety).

To help ensure the safety of users and patients, it is vital that the user read, understand, note, and where applicable, strictly observe all **warnings**, **cautions** and **safety markings** within this document and on the machine.

In particular, the user must read, understand and know the Emergency Procedures described in [Section 1.7.5](#) before attempting to work with the equipment.

The user should note the following information in this chapter:

- Intended use
- Training

1.7.2 Warning Labels

The following are examples of some of the warning labels that may be found on Elekta[®] products:

Warning label



Indicates a specific warning if displayed in conjunction with warning text.

Instructs user to refer to system documentation if displayed without warning text.

Radiation warning label



Indicates the possibility of a radiation hazard.

High voltage warning label



Indicates the presence of high voltage.

Laser warning label



Indicates the presence of a laser device.

Do not sit



Sitting on component can cause damage to the equipment.

ESD warning label



Indicates the presence of Electrostatic Discharge Sensitive Devices.

RF interference



Indicates that RF interference may occur in the vicinity of equipment marked with this symbol.

1.7.3

Maintenance and Faults

Do not use the Precise Table for any application until you are sure that the user routine checks have been satisfactorily completed and that the planned maintenance program is up to date.



WARNING 2

If any part of the equipment is known or suspected to be defective or incorrectly adjusted, DO NOT USE the equipment until a repair has been made. Use with defective or incorrectly adjusted components or systems could expose the users and/or the patient to radiation and other safety hazards. This could lead to fatal or serious injury, or to clinical mistreatment.

Information about the user routine checks and planned maintenance program can be found in the maintenance section of the User's manual.

1.7.4 Safety Devices



Never attempt to remove, modify or override any switches, interlocks, or other safety devices on this equipment. Interfering with such safety devices could lead to fatal or serious injury, or to clinical mistreatment.

1.7.5 Emergency Procedures

Users must be thoroughly familiar with the all *emergency procedures* and the locations of all emergency switches, i.e.:

- Stop motor switches on handheld controllers and control panels in the treatment room.
- Any locally installed emergency OFF switches mounted on the walls of the treatment room and the control area.

1.7.6 Electrical and Mechanical Safety

Only use Precise Table in rooms that comply with all applicable laws or regulations having the force of law concerning electrical safety for this type of equipment.

Always electrically isolate Precise Table and immobilize appropriately before any maintenance, repair, or cleaning tasks.

Any person working on this equipment must be restricted to those legally permitted to do so, and those specifically authorized by local management.



Do not remove covers or cables from this equipment unless expressly instructed to do so in this manual. High electrical voltages and moving parts are present within this equipment, and any contact with these components could lead to death or serious personal injury.



Beware of live terminals even when the main three phase isolator is switched OFF. Voltages associated with the client's interface may still be present, and can cause fatal or serious personal injury.



Be aware that the UPS may continue to power some circuits following an emergency power OFF or by any other means of the power being disconnected. This may cause a risk of electrocution when working on the machine which can lead to serious or fatal personal injury.

1.7.7 Electrostatic Discharge Sensitive Devices



Always wear a wrist strap when handling printed circuit boards (PCBs) and other electronic subassemblies. The wrist strap/lead/engineer combination shall be tested prior to use. Failure to do so can lead to component failure.

Semiconductor devices and integrated circuits are susceptible to damage from electrostatic discharges (ESD).

These components and any assembly containing them, are described as electrostatic discharge sensitive devices.

If they are not handled correctly, these devices can be destroyed immediately or suffer damage that will cause them to fail at a later date. Whenever a printed circuit board (PCB) or other electronic subassembly is to be handled, full electrostatic precautions should be taken.

1.7.8 Fire and Explosion Safety



The Precise Table must not be used in the presence of flammable or explosive gases or vapors, such as certain anaesthetic gases, or potentially flammable or explosive disinfecting sprays, since the resultant vapors could ignite. Use of electrical equipment in an environment for which it was not designed can cause fatal or serious personal injury and lead to fire or explosion.

1.7.9 Electromagnetic Compatibility (EMC)

Precise Table complies with the requirements of applicable EMC standards. Other electronic equipment exceeding the limits defined in such EMC standards, such as mobile telephones, could affect the operation of Precise Table.

Precise Table requires special precautions regarding EMC, and must be installed and put into service in accordance with the information provided in the relevant product documentation.



Do not allow any radio-transmitting devices (such as diathermy units, mobile telephones, etc.) in the vicinity of Precise Table. Such devices could exceed EMC standards and in unusual circumstances could interfere with the correct functioning of Precise Table. In extreme cases this could lead to fatal or serious personal injury, clinical mistreatment, or damage to the equipment.



The use of cables and other components not specified or supplied by Elekta Limited may adversely affect EMC performance.

1.7.10 Cardiac Pacemakers and Other Portable Electronic Medical Devices

**WARNING 9**

Magnetic and/or electric fields which may be generated by this equipment, can have an adverse effect on certain cardiac pacemakers. Cardiac pacemakers can fail from radiation damage at doses as low as 10 Gy, and incur functional changes at doses as low as 2 Gy. This could lead to fatal or serious personal injury.

**WARNING 10**

Do not place cardiac pacemakers in a direct (unshielded) beam. Pacemaker function must be checked throughout the treatment. Failure to observe these precautions can lead to fatal or serious personal injury.

1.7.11 Radiation

Any person working on this equipment must be restricted to those legally permitted to do so, and those specifically authorized by local management.

Full use must be made of all radiation protection features, devices, systems, procedures and accessories.

**WARNING 11**

Before handling parts of the machine in the area of the radiation beam path, check for induced radioactivity. Excessive exposure to radioactivity can constitute a health hazard.

1.7.12 Induced Radioactivity

Maintenance and De-commissioning

**WARNING 12**

Before handling the flight tube, bending magnet, or any other components in their vicinity, check for induced radioactivity. Excessive exposure to induced radioactivity can constitute a health hazard.

**WARNING 13**

National and international laws and regulations for working with ionizing radiations must be observed when any such material is to be handled, transported (by air, sea, or land), and when disposal is considered. Failure to take proper precautions can constitute a health hazard and cause damage to the environment.

Removal of Activated Components

No reading is to exceed 50 $\mu\text{Sv/hr.}$ or the equivalents stated above for instruments calibrated in other units.

Instruments	Reading at surface not to exceed
Minimonitor Series 900	150 cps (counts per second)
Eberline RO-10	50 $\mu\text{Sv/hr.}$ (microsieverts per hour)
Victoreen 491	5 mR/hr. (milliroentgen per hour)
Victoreen 440 RF/A	5 mR/hr. (milliroentgen per hour)
Victoreen 440	5 mR/hr. (milliroentgen per hour)
Nuclear Enterprises PDM1	50 $\mu\text{Sv/hr.}$ (microsieverts per hour)

1.7.13 Laser Product



WARNING 14

Do not stare into the laser beam. Exposure of the eyes to a laser beam can cause serious personal injury.

1.8 Final Disposal

‘Final disposal’ is disposal of the equipment or any part of it, in such a way that it can no longer be used for its intended purpose(s).

Disposal must always be executed in an environmentally sensitive manner that complies with all local and international regulations and laws. Materials hazardous to human health and the environment must be separately removed and disposed of through competent, licensed facilities. The remaining material may be recycled where facilities and local regulations permit.

Never dispose of Elekta[®] products into the domestic waste stream.

Prior to disposal, always contact Elekta Limited for advice and a list of the substances that require specialist attention.



WARNING 15

Incorrect handling or disposal of hazardous material may cause death, serious injury and environmental damage.

1.9

Text Formats

The following text formats may be found in this document. Their definition is explained below.

Text Format:	Definition:
Bold	Text displayed on screens Button labels Screen (window) labels Keyboard key legends File names Sequential selection Important information
Courier	Denotes text to be entered by the user or paths

1.10 Terms

The following are terms that may be found in this document. Their definition is explained below. Where descriptions depict the use of a mouse, it is assumed that the mouse has the standard setup for right hand use.

Term	Definition
Add > List Of > Figures	Denotes a sequential selection from a menu and submenus.
Active or open	Either of these terms are used to refer to an active and operating window, program, or file.
Authorized person	persons specifically authorized by the authority controlling the use of the equipment
Click	Place the mouse pointer on an on-screen item, then press and release the left mouse button once.
Current	See <i>active</i> or <i>open</i> .
Dialog	An on-screen, rectangular object containing information to which the user may be required to respond. Dialogs open and close as necessary in response to the users actions.
Dongle	A device that prevents the unauthorized use of hardware or software.
Double-click	Place the mouse pointer on an on-screen item, then press and release the left mouse button twice in rapid succession.
Drag	Place the mouse pointer on an on-screen item, hold down the left mouse button and, using the mouse, move the item to a new location/position. Then release the mouse button.
Drop-down menu	A list of multiple choices, appearing from a text box.
< > (<Enter>)	Denotes a physical button (i.e. a keypad key).
Icon	An image, when selected, opens an application.
Left (A) / Right (B)	Where the terms 'left' or 'A' and 'right' or 'B' are used to describe a location/position or direction, it is assumed that the person is facing the equipment being described.
M:\Name\Name\Name	Denotes a path to a specific file location.
M: \Name\Name\Name	Denotes a path or text to be entered by the user.
Press	An instruction to press a physical key.
Press <Home>+<Enter>	Denotes keys to be pressed in sequence.
Press <Home><Enter>	Denotes keys to be pressed simultaneously.

Term	Definition
Qualified person	Persons legally permitted to work on, and operate, the equipment in the jurisdiction in which the equipment is being used.
Right (B)	See Left (A) / Right (B)
Right-click	Place the mouse pointer on an on-screen item, then press and release the right mouse button.
Screen	The display area of a monitor, or the display of a system that is switched ON but has no application active.
Select	Choose an on-screen item and activate it by clicking.
Shortcut	Direct access to an application by selecting an icon or pressing a key sequence.
Submenu	A box with multiple choices that appears after a selection.
Text box	This is used to display information entered by a user, or sets of data.
User	The body which has authority over the equipment and the person(s) who actually use the equipment.
Window	The display on the screen of a system with an active application.

1.11 Abbreviations

The following are abbreviations which are used in Elekta® documentation. Their definition is explained below.

Abbreviation	Definition
ABC	Active Breathing Coordinator
ACB	Arm Control Board
ACR	American College of Radiology
AFC	Automatic Frequency Control
AFD	Axis Film Distance
AI	Angiographic Image
ALARA	As Low As Reasonably Achievable
ALARP	As Low As Reasonably Practicable
AmSi	Amorphous Silicon
APS	Automatic Positioning System™
ASU	Assisted Set Up
BEV	Beam Eye View
BF	Bending Fine
BLD	Beam Limiting Device
BLS	Beam Limiting System
BMP	Bitmap (image format)
BOM	Bill Of Materials
BU	Business Unit
CAN	Controlled Area Network
CAT	Customer Acceptance Test
CAX	Central Axis
CB	Circuit Breaker
CC	Couch Control
CCP	CAN Calibration Protocol
CCTV	Closed Circuit Television
CD	Compact Disc
CFR	Customer Feedback Report
CITP	Clients Interface Terminal Panel (interface between Elekta product and client hardware)
CMM	Corrective Maintenance Manual
CMUM	Clinical Mode Users Manual

Abbreviation	Definition
CRP	Common Reference Point
CT	Computerized Tomography
DAT	Digital Audio Tape
DCB	Detector Control Board
DDR	Digitally Reconstructed Radiograph
DDS	Digital Data Storage (mass storage tape)
DICOM	Digital Imaging and Communications in Medicine
ECC	Emitter/Collector Current
ECI	External Computer Interface (option for networking SLi/SLi Plus or Vericord S3 to clients external computer)
ECR	Eccentric Column Rotation
EIM	Electrical Interface Module
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interface
EPID	Electronic Portal Imaging Device
ERT	Earth Reference Terminal
ESD	Electrostatic Sensitive Device
FAD	Focus Axis Distance
FCO	Field Change Order
FDA	Food and Drug Administration of the United States Department of Health and Human Services
FFD	Film Focus Distance
FKP	Function Keypad
FMEA	Failure Mode and Effects Analysis
FPGA	Field Programmable Gate Array
FPLA	Field Programmable Logic Array
FPLS	Field Programmable Logic Sequencer
FRU	Field Replaceable Unit (now 'Service Part')
FS	Fuse
FSD	Focus to Skin Distance (same as SSD)
FTM	Fast Tune Magnetron
FTP	File Transfer Protocol
G-T Axis	Indicating an axis relating to G and T sides of the digital linear accelerator
GUI	Graphical User Interface
HCI	Human Control Interface

Abbreviation	Definition
HHC	Handheld Controller
HME	Hardware Movement Enable
HT	High Tension (high voltage)
I/O	Input/Output
ICOM	IDEF abbreviation for Inputs, Outputs, Controls & Mechanisms
iCOM-Fx	External Field Selection
iCOM-Vx	Linac Verification Interface
IEC	International Electrotechnical Commission
IMAT	Intensity Modulated Arc Therapy
IMKM	In-Room Monitor, Keyboard and Mouse
IMRT	Intensity Modulated Radiation Therapy
ISO	The International Organization for Standardization
ISO9001/2/3	International Standard for Quality Systems
ISS	Isocentric Sub System (used on the SRS 200 XK system)
JPEG / JPG	Joint Photographic Experts Group (image format)
LAN	Local Area Network
LCC	Linac (digital accelerator) Control Cabinet
LCS	Linac (digital accelerator) Control System
LED	Light Emitting Diode
LGK	Leksell Gamma Knife [®]
LGP	Leksell GammaPlan [®]
LH	Left Hand
Linac	Digital Linear Accelerator
LV	Low Voltage
MCU	Main Control Unit
MeV	Mega Electron Volts
MLC	MultiLeaf Collimator
MLP	MultiLeaf Preparation
MR	Magnetic Resonance
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
MU	Monitor Unit(s)
MV	Megavolts
MVI	Megavoltage Imaging

Abbreviation	Definition
N/A	Not applicable
NAU	Network administration utility
NEMA	National Electrical Equipment Manufacturers' Association (US)
NPN	Negative/Positive/Negative (transistor)
NTD	Normal Treatment Distance
ODI	Optical Distance Indicator
PC	Personal Computer
PCB	Printed Circuit Board
PDF	Portable Document Format (file format)
PDI	Patient Docking Indicator
PESS	Programmable Electronic Subsystem
PET	Proton/Electron Tomography
PI	Portal Image
PM	Preventive (or Planned) Maintenance
PNP	Positive/Negative/Positive (transistor)
PP	Peak to Peak
PPG	Programmable Pulse Generator
PRF	Pulse Repetition Frequency
PRT	Procurement Radio Therapy (locally procured equipment and components for radiotherapy applications)
PSB	Pressure Sensor Board
PSU	Power Supply Unit
PVC	Polyvinylchloride
QA	Quality Assurance
RF	Radio-Frequency
RH	Right Hand
RT	Radiation Therapy
RTU	Remote Terminal Unit
RVS	Remote Viewing Station
SAD	Source Axis Distance
SDI	Simulator Data Interface
SID	Source Image Distance
SLN	Single Linac Network
SMUM	Service Mode Users Manual
SPR	Software Problem Report

Abbreviation	Definition
SQL	Structured Query Language (Microsoft Database)
SSD	Source Surface Distance
SSN	Service Support Node
TCP	Treatment Control Panel
TCP/IP	Transmission Control Protocol / Internet Protocol
TLD	Thermal Luminescence Detectors
TPS	Treatment Planning System
TRM	Treatment Room Monitor
TSN	Technical Service Node
UCP	Unit Center Point
UPS	Uninterruptable Power Supply
VDU	Visual Display Unit
XVI	X-ray Volume Imaging

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1.12 Important Notices

When an Important Notice is issued to the user, it should be inserted into this section. The Amendment Record must be completed in the preliminary section of this manual.

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1.13 User Notices

When a User Notice is issued to the user, it should be inserted into this section. The Amendment Record must be completed in the preliminary section of this manual.

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2 Using the Precise Table

Section	Title	Page
2.1	Introduction.....	2-2
2.2	Parts Description	2-3
2.3	User Interfaces	2-4
2.4	Patient Positioning	2-5
2.5	Precise Table Movements.....	2-5
2.6	Brakes	2-8
2.7	Emergency Stop Motors	2-11
2.8	Emergency Down Drive Procedure	2-13
2.9	Precise Table Movement Limits	2-14
2.10	Table Data	2-15

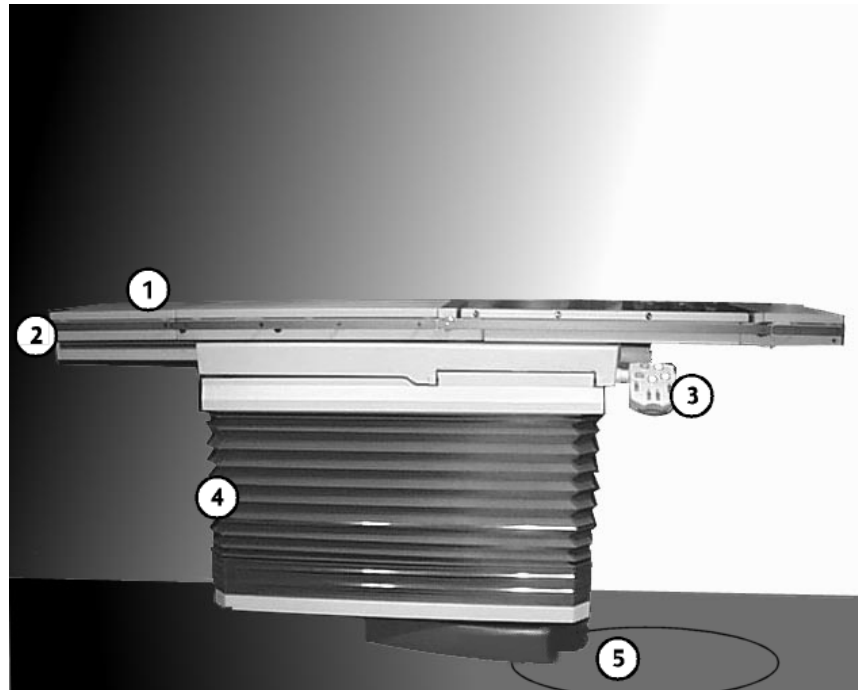
2.1 Introduction

Purpose

The purpose of the Precise Table is to provide easy and accurate patient positioning in conjunction with a linear accelerator or simulator.

2.1.1 System Description

The Precise Table consists of the main assemblies shown in [Figure 2.1](#):



- | | |
|---------------------------|---------------------|
| 1 Table top | 4 Support column |
| 2 Table top release latch | 5 Iso-rotation base |
| 3 User interface | |

Figure 2.1 Precise Table - main assemblies

2.2 Parts Description

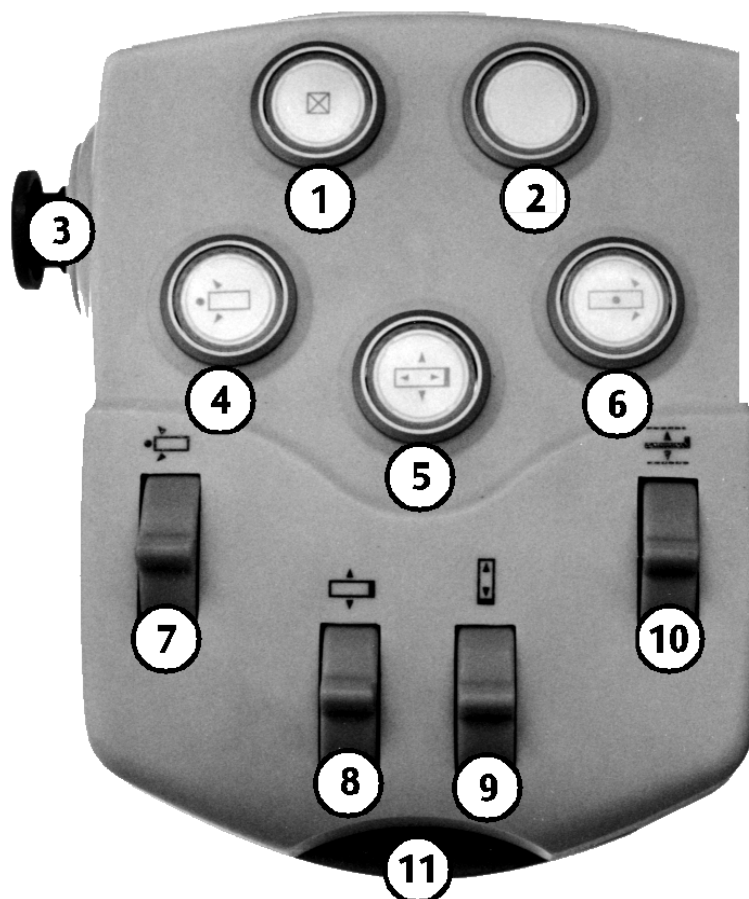
Table 2.1 Precise Table parts description

Part	Description
Support column	The support column provides: • Lateral and longitudinal carriage support • Column rotation • Vertical movement
User interface	There are two identical user interfaces, one located either side of the table.
Table top	• Three table tops are available • Accessories can be attached to each top • Two table tops can be rotated through 180° and latched for special treatment requirements (see Chapter 3)
Iso-rotation base	The iso-rotation base provides floor rotation for the support column about the isocenter.

2.3 User Interfaces

2.3.1 User Interface Description

There are two identical user interfaces, one located either side of the table.



- | | |
|---------------------------------------|---|
| 1 Touchguard override | 7 Isocentric Floor Rotation Speed/Direction |
| 2 Spare (not used) | 8 Lateral Speed/Direction |
| 3 Emergency Stop Motors button | 9 Longitudinal Speed/Direction |
| 4 Isocentric Floor Rotation brake | 10 Vertical Speed/Direction |
| 5 Lateral/Longitudinal Movement brake | 11 Movement Enable bar |
| 6 Support Column Rotation brake | |

Figure 2.2 Precise Table user interface

2.4 Patient Positioning



WARNING 16

Make sure that persons, their clothing or objects cannot be trapped or damaged by the Precise Table as this can lead to personal injury.



WARNING 17

Patients must only support themselves on the table top's surface. Using other parts of the Precise Table for support can cause injury to the patient and/or damage to the equipment.

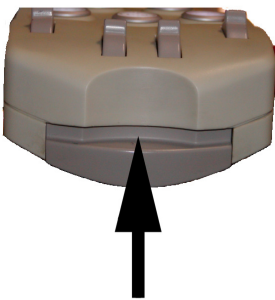
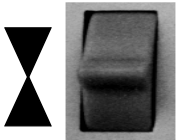
It is recommended the user has an unobstructed view of the patient from the control room prior to and during irradiation.

2.5 Precise Table Movements

2.5.1 Enabling Movements Procedure

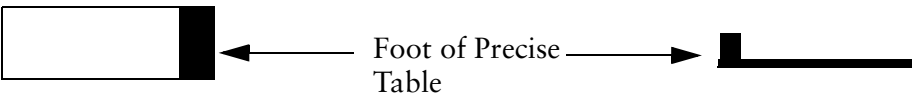
Activate the **<Movement Enable>** bar and use the **<Thumbwheel>** to control table movement.

Table 2.2 Enabling Precise Table movements

Illustration	Description	Action
	<Movement Enable> bar	Hold in to enable movement <i>Note: Only release when table has stopped moving, by releasing <Thumbwheel> first.</i>
	<Thumbwheel>	Move up/down to select direction Move further away from center to increase speed

2.5.2 Foot of the Precise Table

The foot of the Precise Table is defined as being furthest away from the gantry with isocentric floor rotation and support column rotation equal to 0°



2.5.3 Direction Symbols - Movement

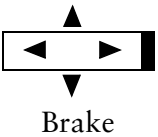
The direction symbols shown in Table 2.3 are shown on the user interface above the thumbwheels.

Table 2.3 Direction Symbols - movement

Symbol	Movement
	Isocentric Floor Rotation
	Precise Table Lateral
	Precise Table Longitudinal
	Precise Table Vertical

Note:

1. If the Precise Table is under motorized control for lateral or longitudinal movements and the manual brake for these movements is also applied, then it is not possible to manually move the table in the opposite direction until the motorized movement has stopped.



2. If the Precise Table is under motorized control for isocentric floor rotation, it is not possible to manually release the brake.

2.5.3.1 User Interface Priority of Movement

Operation of movements from the user interface have priority over those from the handheld controller (HHC).

2.5.3.2 Handheld Controller Priority of Movement

If the table is being moved laterally or longitudinally using a handheld controller and an opposite direction movement is attempted using a second handheld controller, the movement will stop.

2.5.4 Assisted Set Up (ASU)

Assisted Set Up provides the facility to automatically move the linear accelerator gantry, table isocentric rotation and geometric parameters to the positions specified in the prescription.

Note: *The Precise Table will not move using the ASU function unless licensed and enabled.*

ASU can be used inside the treatment room, provided the treatment room door (barrier) is open.

On the HHC, function keys < or > are used to set function number 6 (or function 14 for Standard head—see document 4513 370 2006, *Precise Treatment System Clinical Mode User Manual* for function selection).

Once ASU is selected, it is activated using the **T2 Gantry** thumbwheel while the HHC Movement Enable switches (one or both) are depressed. The gantry, diaphragm rotation, diaphragms and table isocentric rotation move to the required positions simultaneously.



WARNING 18

If ASU is used to activate the gantry and table isocentric movements, then these movements occur simultaneously. The user is responsible for ensuring that collision does not occur, and should take additional care in these circumstances. Failure to do so can result in damage to the equipment and/or personal/patient injury.

It is possible to disable the gantry and table isocentric movement as a function of the ASU by changing the settings in the configuration utility.

The user can stop ASU at any time during its progress by releasing the Movement Enable switches or the gantry thumbwheel on the HHC.

Note: *Each linear accelerator movement made via ASU is subject to a speed reduction process which reduces the speed of movement to a nominal 50% of maximum. The speed reduction process is activated automatically at an angle of 5° before the required stop angle (rotational movement) or 25 mm before the required stop position (linear movement).*

Note: *ASU is not available when an electron applicator is fitted.*

Note: If a table brake is OFF, ASU will not function.

2.5.4.1 Remote-controlled table movement using ASU

ASU can be used outside the treatment room, provided the treatment room door (barrier) is closed and the table clutch is ON. <ASU> and <AUTO> on the function keypad must be pressed simultaneously to move the gantry, table isocentric rotation, diaphragm rotation and fieldsize, as required, at the fixed preset.



WARNING 19

When ASU is used to remotely position the Precise Table, Elekta recommend that the user checks all intended movements with the patient in the treatment position, before leaving the treatment room. Failure to observe this can lead to injury of the patient.

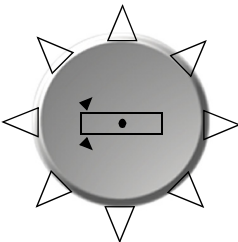
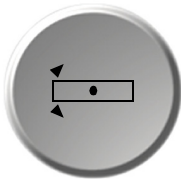
Note: It is recommended that the user has an unobstructed view of the patient from the control room prior to and during irradiation.

2.6 Brakes

Applying Brakes Procedure

Press the <Brake> buttons to turn the brakes ON or OFF.

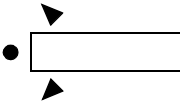
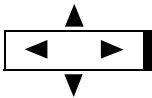
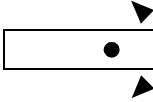
Table 2.4 Brakes

Brake ON	Brake OFF
	
Button is illuminated	Button not illuminated
No Movement	Manual movement possible in the direction indicated by the symbols on the <Brake> buttons

2.6.1 Direction Symbols - Brakes

The direction symbols shown in [Table 2.5](#) are shown on the user interface push-buttons.

Table 2.5 Direction symbols - brakes

Symbol	Movement Brake
	Isocentric Floor Rotation
	Precise Table Lateral/Longitudinal
	Support Column Rotation



WARNING 20

Before the patient sits on the Precise Table, the user must visually check that the Precise Table brake is ON. Failure to do so can result in personal injury and/or equipment damage.

2.6.2 Touch Guard Override

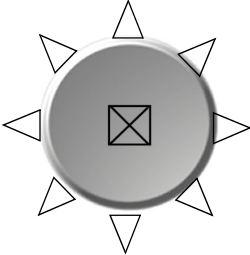
The Touch Guard Override allows movement if the Touch Guard inhibit is in operation.



Care must be taken when using the Touch Guard Override since this will remove touch guard protection allowing movements which could cause injury to the patient and/or damage to the equipment.

WARNING 21

Press the button continuously to override the Touch Guard inhibit.

	
Button is illuminated	Button not illuminated
Motorized movement permitted	Motorized movement NOT Permitted

2.7 Emergency Stop Motors

2.7.1 Disable Movements Procedure

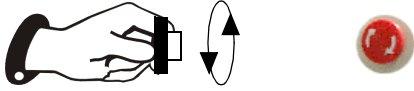
To disable all movements:

Step	Action	Result
1	 The <Emergency Stop Motors> button is in the OUT position. Push this button to stop motors.	 Movements are disabled and the <Emergency Stop Motors> button is in the IN position.

Note: *The Emergency Stop Motors procedure will not shut down the linear accelerator/simulator power supply.*

2.7.2 **Reset Motors**

To re-establish motorized movement capability:

Step	Action			Result
1	Twist the <Emergency Stop Motors> button to the OUT position 			 Button OUT
2	SLi/SLi Plus/Precise/Elekta Synergy™ Platform Reset Motors 	SL75/5 Reset Motors 	Simulator No reset on HHC required	Stop Motors are reset

2.8 Emergency Down Drive Procedure

Purpose

In the event of mains power supply failure or non-normative operation, the Precise Table can be lowered to its minimum height position to allow the safe unloading of the patient using the Emergency Down Drive function.

This function is available for five minutes after mains power supply failure. It is powered by an Uninterruptible Power Supply (UPS).

Note: *The UPS is checked during planned maintenance activities—no user checks of this power source are necessary.*

Procedure

Lowering of the Precise Table using the Emergency Down Drive function:

Note: *It may be necessary to rotate the table to avoid the gantry if using a UPS.*

- 1 Press and hold the **<Movement Enable>** bar on one of the table user interface modules. The Precise Table will lower at a speed of approximately 10 mm/s.
- 2 If the Precise Table does not lower, operate one of the treatment room 'Emergency OFF' buttons and repeat step 1.
- 3 If the Emergency Down Drive fails, it is possible to remove the Precise Table Z-drive covers and manually lower the table using a specialized tool. This procedure should only be performed by trained service personnel, and is detailed in document 4513 370 1862, *Precise Table Corrective Maintenance Manual*.



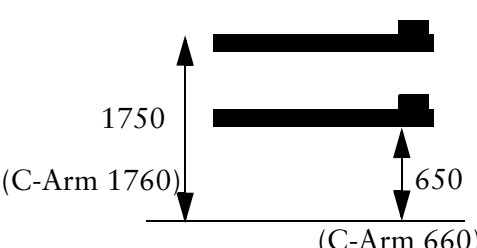
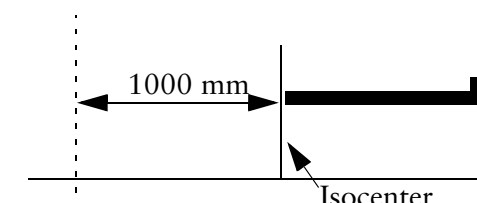
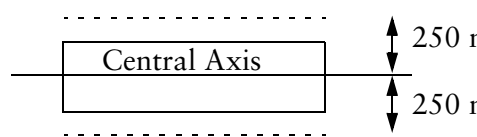
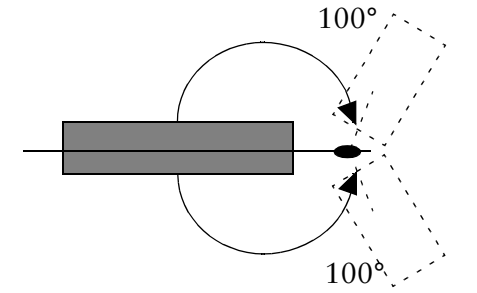
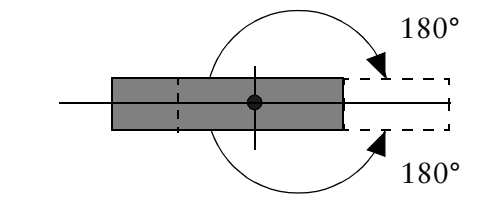
Care should taken when the covers are removed as high electrical voltages and moving parts are present within this equipment, and any contact with these components could lead to fatal or serious personal injury.

Brake Release

To enable manual movement of the Precise Table, the brakes can be released for the longitudinal and lateral movements, isocentric floor rotation and the support column rotation by pressing the appropriate brake release buttons on one of the user interfaces.

2.9 Precise Table Movement Limits

Table 2.6 Precise Table movement limits

Movement Range (mm) with Standard Therapy or C-Arm table top (C-Arm table measurements in brackets are different)	Speed of Motorized Movement		Manual Movement Available?
	From	To	
Vertical 	2 mm/s	>45 mm/s <100 mm/s	✗
Longitudinal 	2 mm/s	>45 mm/s <100 mm/s	✓
Lateral 	2 mm/s	>45 mm/s <100 mm/s	✓
Isocentric floor rotation 	0.3° /s	>6°/s <7°/s	✓
Support column rotation 	-----	-----	✓ ONLY

2.10

Table Data

2.10.1

Table Vertical

Description

Parameter defining the vertical distance (cm) of the table surface from the isocentric plane.

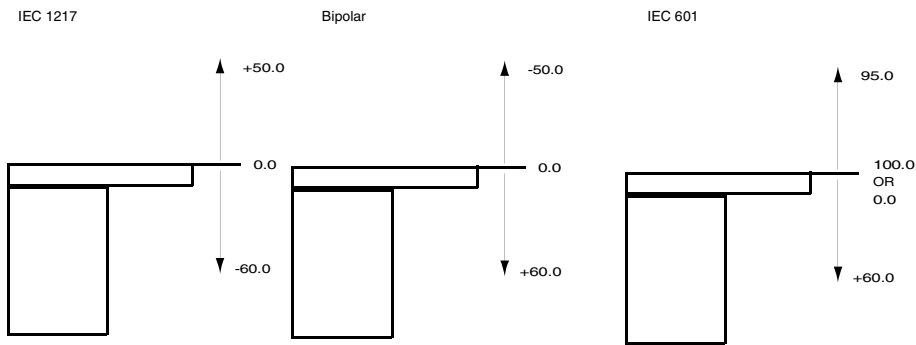


Figure 2.3 Table vertical—IEC 1217, Bipolar, IEC 601

2.10.2 Table Lateral

Description

Parameter defining the distance (cm) of the midline of the table laterally from the isocenter.

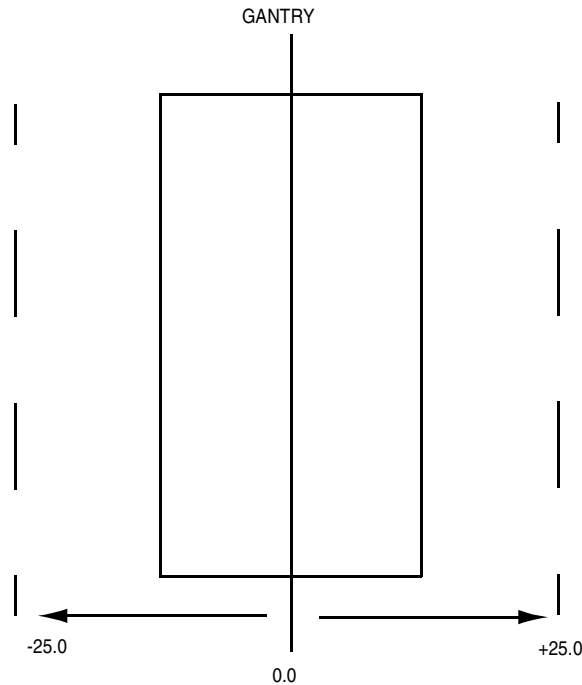


Figure 2.4 Table lateral—IEC 1217 and Bipolar

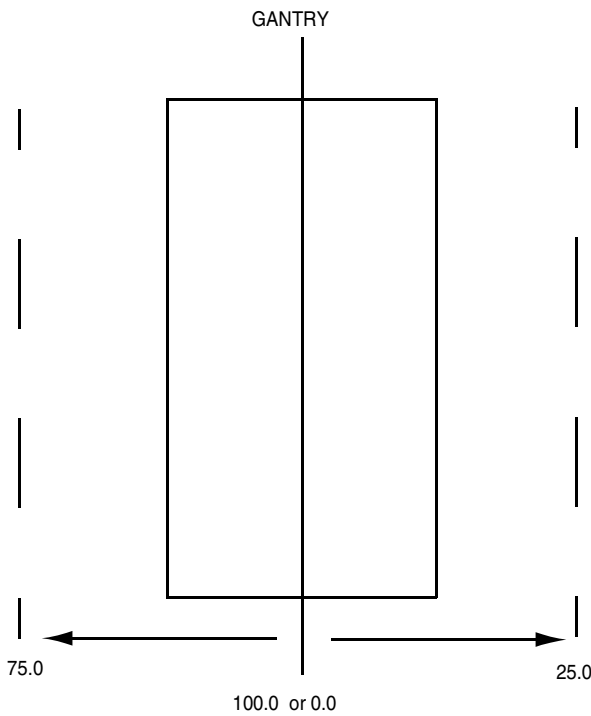


Figure 2.5 Table lateral—IEC 601

2.10.3 Table Longitudinal

Description

Parameter defining the displacement (cm) of the gantry table end from the isocenter.

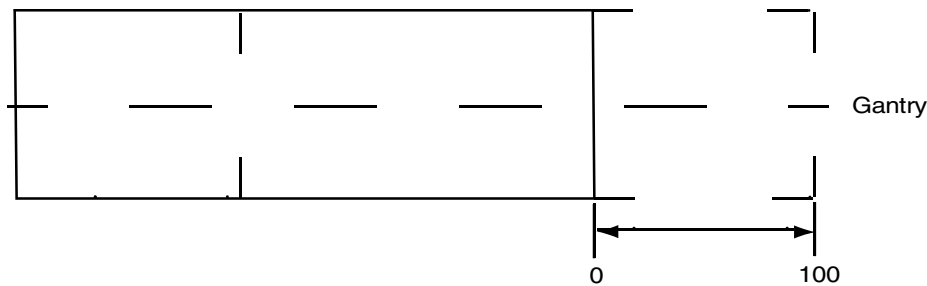


Figure 2.6 Table longitudinal—IEC 1217

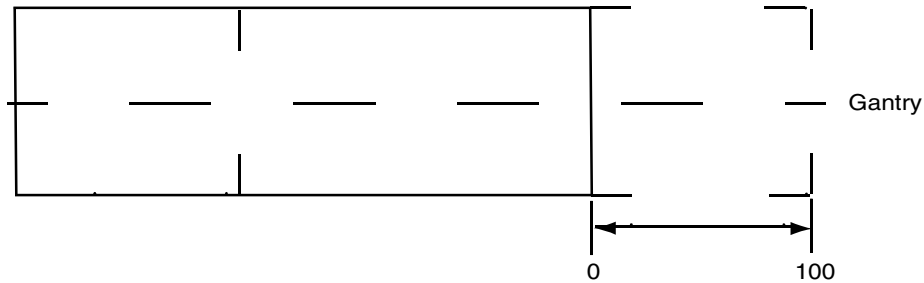


Figure 2.7 Table longitudinal—Bipolar

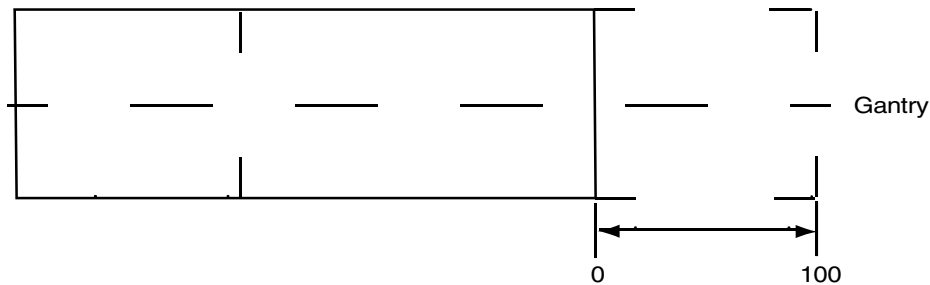


Figure 2.8 Table longitudinal—IEC 601

2.10.4

Column Rotation

Description

Parameter defining the angle of the table top with respect to the supporting column/base.

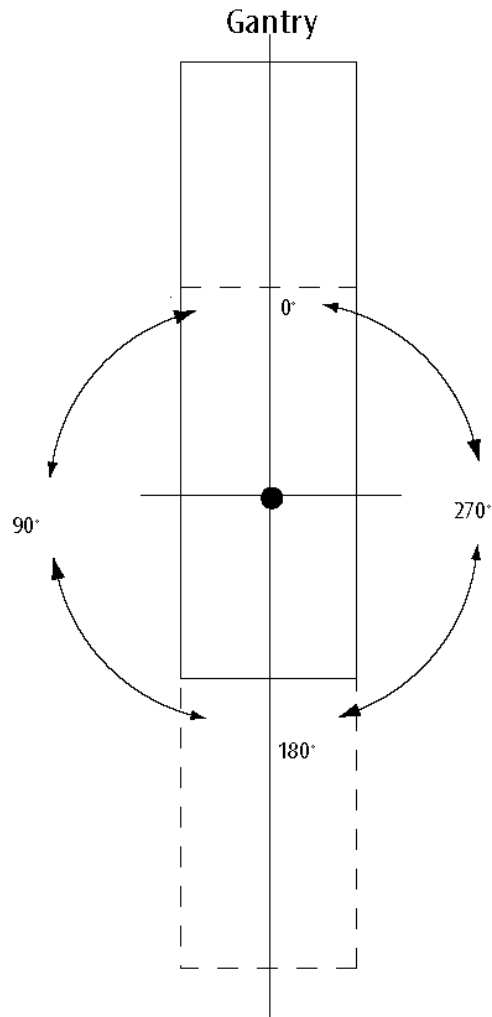


Figure 2.9 Column rotation—IEC 1217

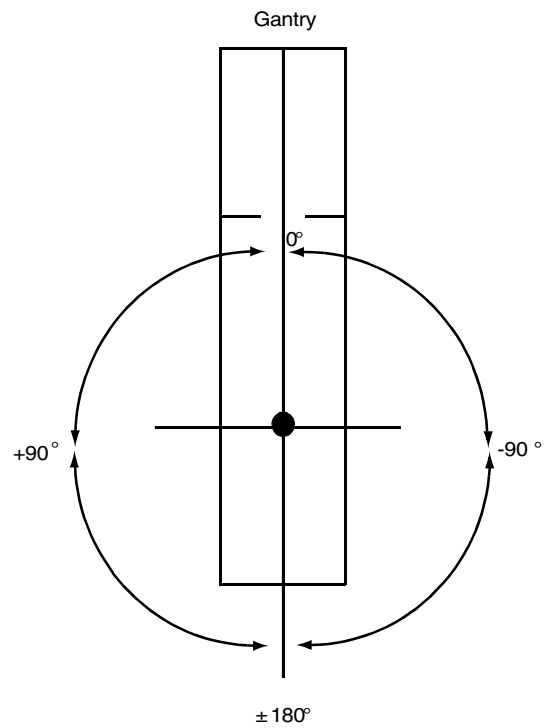


Figure 2.10 Column rotation—Bipolar

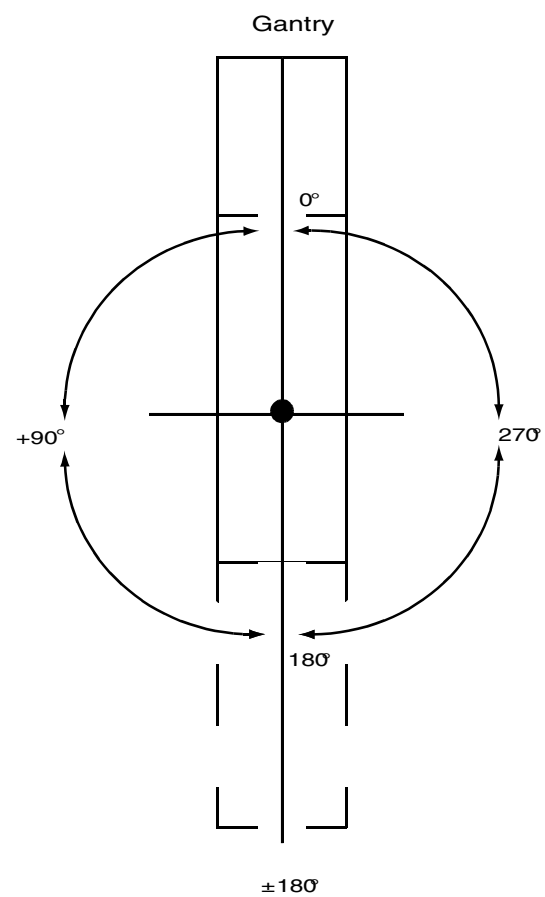


Figure 2.11 Column rotation—IEC 601

2.10.5 **Isocentric Rotation**

Description

Parameter defining the angle of the table top with respect to the isocenter rotation.

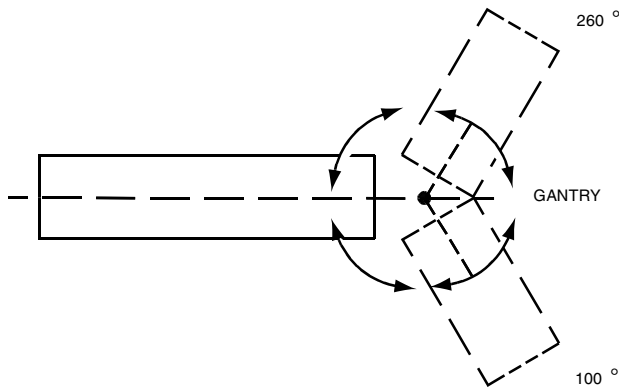


Figure 2.12 *Isocentric rotation—IEC 1217*

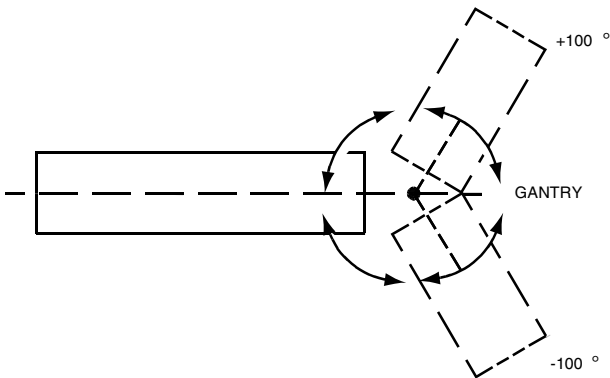


Figure 2.13 *Isocentric rotation—Bipolar*

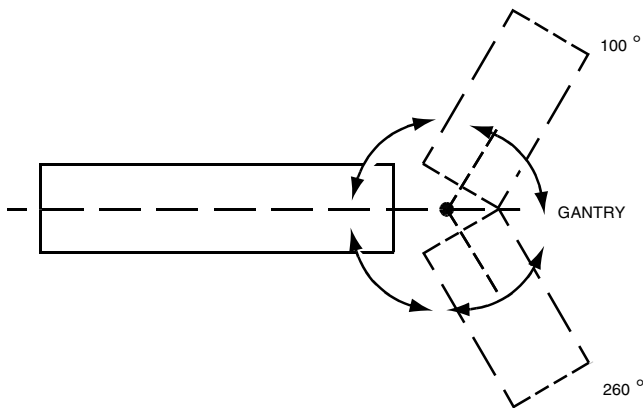


Figure 2.14 *Isocentric rotation—IEC 601*

3 Table Tops

Section	Title	Page
3.1	Introduction.....	3-2
3.2	Standard Therapy Table Top	3-5
3.3	C-Arm Therapy Table Top.....	3-7
3.4	C-Arm Functionality	3-10
3.5	Simulator Table Top (Carbon Fiber)	3-17

3.1 Introduction

3.1.1 Types

There are three types of table top available:

- The Standard Therapy Table Top
- C-Arm Therapy Table Top
- The Simulator Table Top

3.1.2 Usage

All three table tops can be used for simulation or treatment.



Make sure that the table top is locked in position before use and always when a patient is on the table. The handle of the latch should be in the locked position. Do not unlock when loaded. Unlocking the table top when loaded can cause injury to the patient and/or user, and damage to the Precise Table.

The Simulator table top has an aluminium equivalent of less than 1.5 mm.

3.1.3 Permissible Loads



Overloading of the table top can cause damage to the equipment and/or serious injury to the user and/or patient.

The maximum permissible patient load on the Precise Table is 200 kg.

The maximum load at the end of the Precise Table (headboard/footboard removed) is 100 kg.

Note:

Full water tanks may be placed on the Precise Table, but only in the defined region (see document 4513 370 1862 Precise Table Corrective Maintenance Manual for further information).

3.1.4 Inspection/Maintenance

The Precise Table should be inspected daily for signs of deterioration or damage. Particular attention should be paid to the Mylar film. Refer to [Chapter 4](#) for further information on maintenance.

3.1.5 Removing the Table Top

For instructions on removing the table top assembly, refer to document 4513 370 1862, *Precise Table Corrective Maintenance Manual*.

3.1.6 Rotating the Table Top

The following procedure shows how to rotate the table top through 180°.

Note: *The Simulator Table Top cannot be rotated.*

Ensure that the Precise Table is in a longitudinal position (so the table top clears the under carriage and the latch mechanism becomes clearly accessible).



Figure 3.1 Table top latch — open position

- 1 Squeeze the table top latch using the inner lever and pull out until it latches into the open position as shown in [Figure 3.1](#).



Figure 3.2 Rotating the table top

- 2 Manually rotate the table top through 180°.



Figure 3.3 Table aligned and table lock in closed position

- 3 Realign the table top. Squeeze the inner lever to release the latch and push the table lock firmly into its closed position.



WARNING 25

The Precise Table top lock lever mechanism is red on its upper surface. When the top lock is latched correctly in the closed position, the red colour should not be visible. Failure to correctly lock the Precise Table can cause injury to the patient.

3.1.7

Accessories

Accessory Mounting Position

All three Table Tops are equipped with accessory rails on each side.

The table top with C-Arms has additional removable accessory rails.

3.1.7.1

Fitting an Accessory

Slide the accessory fixture on to the mounting rails and secure it in position with the screw locks. Refer to user instructions provided with accessories for further information.



WARNING 26

Attaching accessories to the table top increases the risk of collision which could cause serious personal injury and/or damage to the equipment.



WARNING 27

When moving the table top in the longitudinal direction, take care not to trap fingers or any other body parts between table top and support base. Failure to observe this can cause personal injury.



Make sure the table top is latched correctly prior to positioning a patient and the movement brakes are ON before treatment commences. Failure to do so can result in injury to the patient.

3.2 Standard Therapy Table Top

3.2.1 Design

The Standard Therapy Table Top is designed to allow barrier-free irradiation either vertically or obliquely from beneath the Precise Table. It consists of a number of removable panels and is covered with a tensioned Mylar sheet.

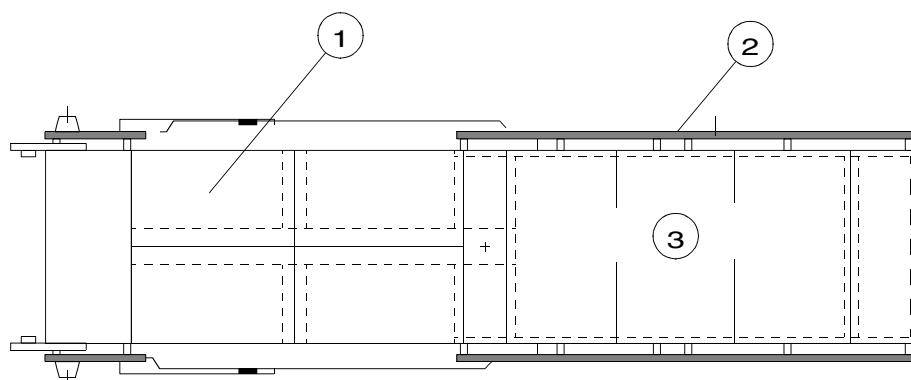


Figure 3.4 Standard Therapy Table Top — design

- 1 Small removable panels 3 Large removable panels
2 Fixed accessory rails

3.2.2 Loading Conditions for Accessories

The maximum mass which can be safely supported by *any* single rail is 20 kg.

For loads attached to a **short rail**:

- Loads which extend beyond the rail must not exert a bending moment on the rail greater than 11 Nm.

For loads attached to the **end of an accessory rail**:

- Loads which extend beyond the accessory rail must not exert a bending moment on the rail greater than 11 Nm.

For loads attached **between the two fixing points of an accessory rail**:

- Loads which extend beyond the accessory rail must not exert a bending moment on the rail greater than 14.5 Nm.

**WARNING 29**

Failure to observe the maximum stated loading limits for accessories could cause injury to the patient and/or user and damage to the Precise Table.

3.2.3 Standard Therapy Table Top Panels

3.2.3.1 Removing Panels

The panels are removed by lifting them from their bed on the therapy table top and sliding out from under the Mylar while supporting the panel from below.

Take care when removing a panel as once it is lifted from its fixing it is unsupported by the bed.

3.2.3.2 Replacing Panels

Each panel and its location is labelled alphabetically.

Panels should be replaced in their original position.

3.2.3.3 Special Care Instructions

Take care not to damage the Mylar support when removing or fitting a panel.

3.3 C-Arm Therapy Table Top

3.3.1 Design

The Table Top is designed with a removable panel and removable accessory rails. The removal panel can either be solid or a tennis racquet design with either a carbon fiber or metal frame.

It also has two C-shaped swinging arms located under the tennis racquet panel. Adjustment of the C-Arm positions allow a wide range of posterior oblique fields to be positioned with minimum effort.

A headboard/footboard extension panel can be fitted at either end of the Table Top to support the patients head/feet during treatment.

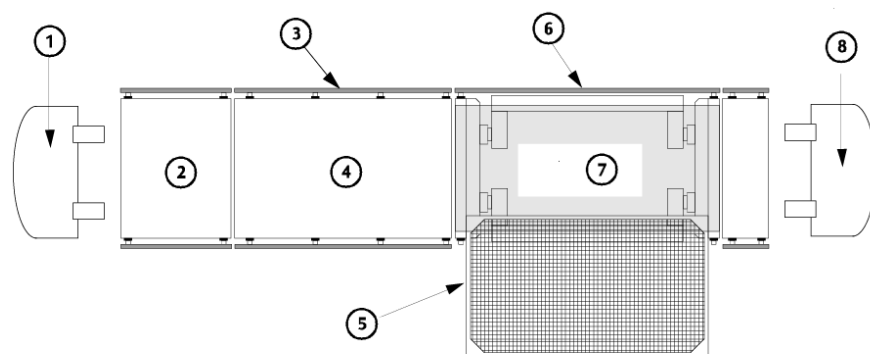


Figure 3.5 C-Arm Therapy Table Top — design

- | | |
|---------------------------------------|--|
| 1 Headboard/Footboard extension panel | 5 Removable tennis racquet/solid panel |
| 2 Extension panel | 6 Removable accessory rail |
| 3 Fixed accessory rail | 7 Mylar sheet |
| 4 Fixed panel | 8 Alternative position for Headboard/Footboard extension panel |

3.3.2 Loading Conditions for Accessories

3.3.2.1 Removable Accessory Rails

For loads attached to a **removable rail**:

- The maximum mass which can be safely supported by a removable rail is 20 kg.
- Loads which extend beyond the removable rail must not exert a bending moment on the rail greater than 7 Nm.

3.3.2.2 Fixed Accessory Rails

For loads attached to a **short rail**:

- The maximum mass which can be safely supported by a short rail is 20 kg
- Loads which extend beyond a short rail must not exert a bending moment on the rail greater than 20 Nm.

For loads attached to the **end of a fixed accessory rail**:

- The maximum mass which can be safely supported is 20 kg
- Loads which extend beyond a rail must not exert a bending moment on the rail greater than 20 Nm.

For loads attached **between the two fixing points of a fixed accessory rail**:

- The maximum mass which can be safely supported is 40 kg
- Loads which extend beyond a rail must not exert a bending moment on the rail greater than 40 Nm.



WARNING 30

Failure to observe the maximum stated loading limits for accessories may cause injury to the patient and/or user, and damage to the Precise Table.

3.3.3 C-Arm Opening Dimensions

Maximum Rectangular Opening

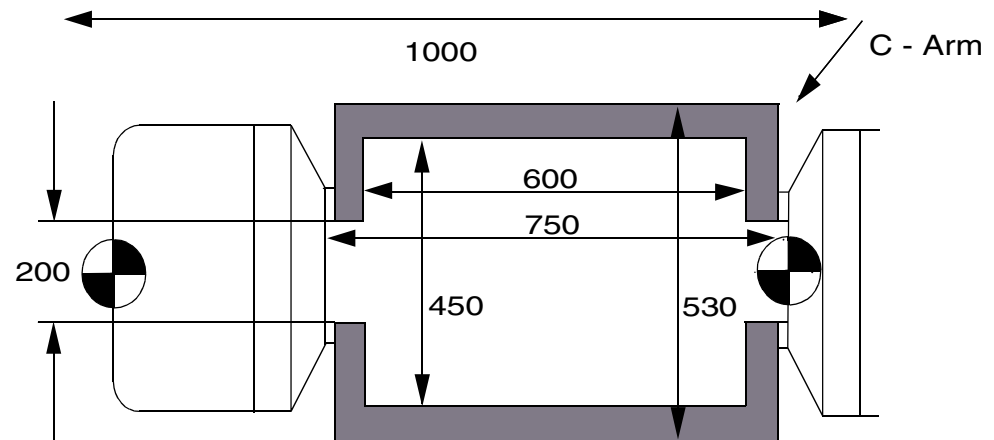


Figure 3.6 C-Arm maximum rectangular opening dimensions (mm)

Oblique Opening

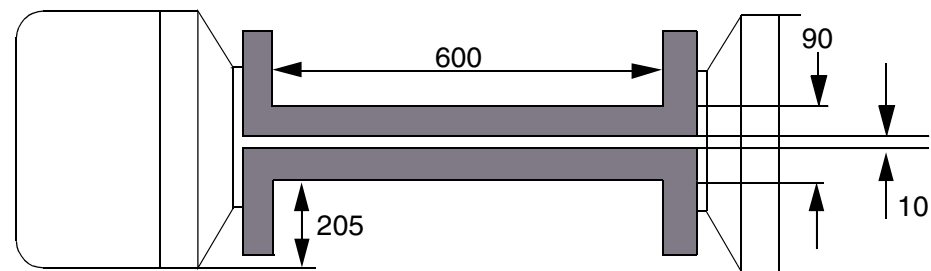


Figure 3.7 C-Arm oblique opening dimensions (mm)

3.4 C-Arm Functionality

Each C-Arm moves through a 180° arc.

There are six stop positions 30° apart.

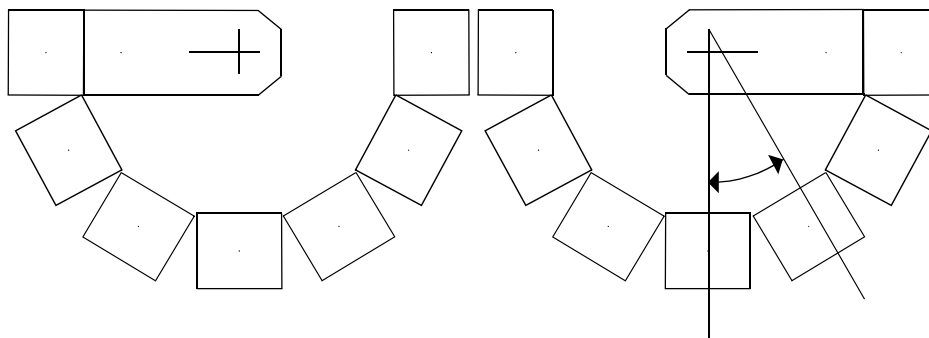


Figure 3.8 C-Arm functionality

3.4.0.1 Changing the C-Arm Position

The C-Arms can be moved manually into the required position by following the procedure below.

- 1 Remove the removable accessory rails, if necessary. (Refer to [3.4.2.4 Fitting/Removing Accessory Rails](#) for procedure)
- 2 Place the hand on the center of the arm and gently push to the next stop or through the next stop to the required stop position.

When moving an arm past its 90° stop, the arm will be in upward movement and the flat of the hand is all that is needed to push it into position.



CAUTION 4

Do not allow patients to use C-Arms as support when getting on or off the Precise Table. Using the C-Arm as a support can cause damage to the equipment.



WARNING 31

Make sure that the C-Arms are in their center or outward position before moving the Precise Table longitudinally. Failure to observe this can cause fingers or other body parts to be trapped leading to personal injury and/or damage to the equipment.



WARNING 32

The user should be aware that when moving the C-Arms into a vertical position, it is possible to trap their fingers or other body parts between the C-Arms and the control panel. Failure to observe this can lead to personal injury.

3.4.1 Tennis Racquet Panels

The tennis racquet provides strong support for the patient with a minimum of radiation absorption.

There are two types of tennis racquet support:

- Metal sided tennis racquet
- Carbon fiber sided tennis racquet

The carbon fiber provides enhanced X-ray translucence allowing the user to setup without moving the tennis racquet frame.

3.4.1.1 Removing the Tennis Racquet Panel

To remove or offset the tennis racquet:

- 1 Remove the accessory rails first. (Refer to [3.4.2.4 Fitting/Removing Accessory Rails](#) for procedure)
- 2 Holding either side of the frame; push the tennis racquet firmly away from the body.

3.4.2 Headboard/Footboard

The headboard/footboard is designed to support the patients' head or feet during treatment. The headboard should **not** be used to support the weight of the patient.

3.4.2.1 Fitting the Headboard/Footboard

Insert the locating pins into the two sockets on either end of the Precise Table and push until the pins click into position. To remove the headboard/footboard reverse this procedure.



The headboard/footboard extension panel is designed to support the patients head or feet during treatment. Maximum weight at the end of the table with the headboard/footboard fitted: 10 kg uniformly distributed. Overloading of the headboard/footboard could cause fatal or other serious personal injury and/or damage to the equipment.



When fitting the headboard/footboard to the table top, take care to avoid collisions. Failure to observe this can lead to equipment damage and/or injury to the patient.

3.4.2.2 Removing the End Panel

The following is the procedure to shorten the C-Arm table top length by 40 cm.



Figure 3.9 C-Arm section positioned at foot of table

- 1 Rotate the table top through 180° to ensure C -Arm section is now at foot of table.



Figure 3.10 Extension panel release latch - top and underside view

- 2 Lift the extension panel release latch.



Figure 3.11 Removing extension panel

- 3 Pull the panel out and remove completely.

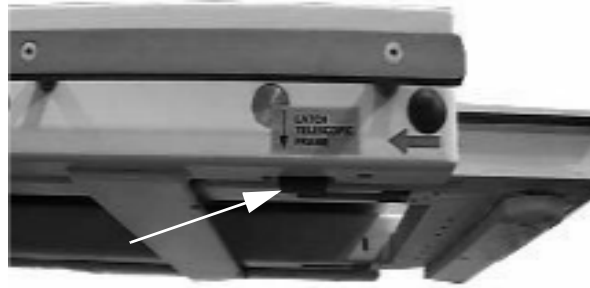


Figure 3.12 Telescopic frame latch

4 Pull the telescopic frame latch towards you.

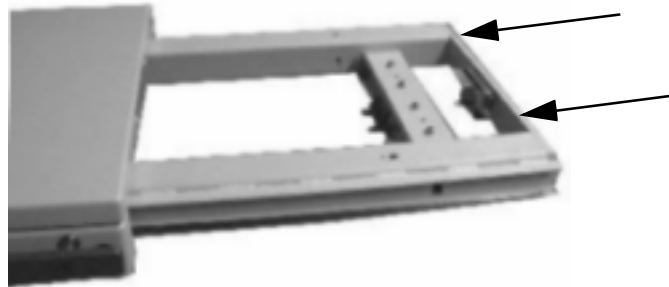


Figure 3.13 Support bars

5 Push in support bars until locked.

3.4.2.3 Fitting the End Panel

The following is the procedure for fitting the end panel on the C-Arm Therapy Table Top.

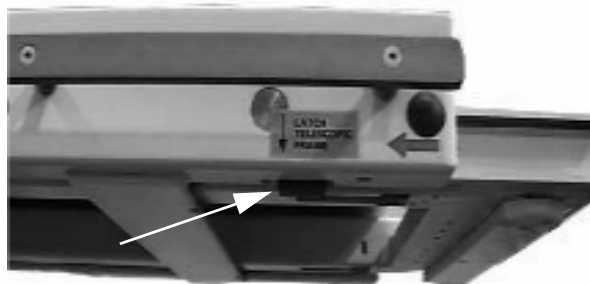


Figure 3.14 Telescopic frame latch

- 1 Pull the telescopic frame latch towards you.

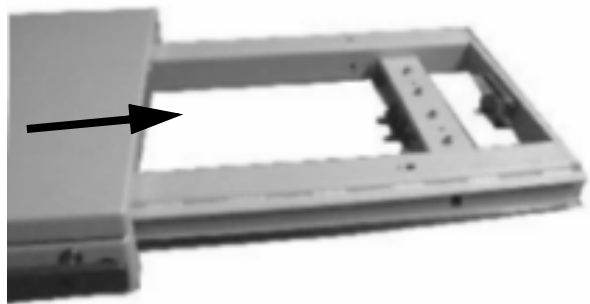


Figure 3.15 Removing support bars

- 2 Pull the support bars fully out.

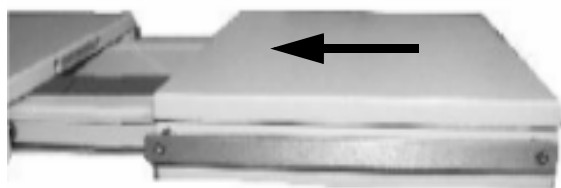


Figure 3.16 Re-latching panel

- 3 Slide the panel until it re-latches into position.

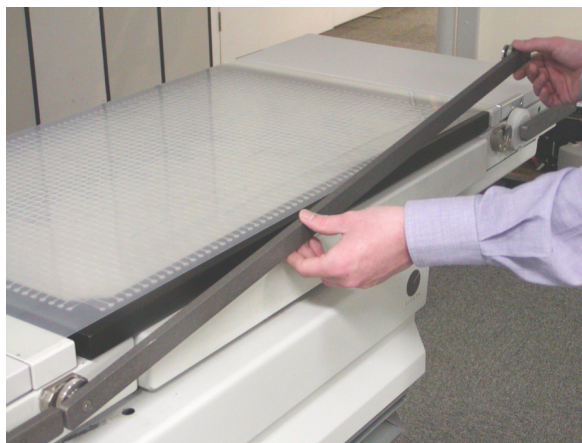
3.4.2.4 Fitting/Removing Accessory Rails

The accessory rails on either side of the tennis racquet can be removed.
Reverse the procedure to re-fit accessory rails.



Figure 3.17 Accessory rail fixing screw

- 1 Release the large screw fixings at each end of the accessory rail as shown in [Figure 3.17](#).



- 2 Lift and remove the rail.



Before attaching accessories, make sure that the rail is secure. Failure to do so can result in accessories falling causing injury to the patient and/or user.

3.4.2.5

Warning and Labels on the Table Top

These warnings and labels are displayed on the C-Arm Therapy Table Top.



Figure 3.18 Warning Symbol

Where [Figure 3.18](#) is displayed, refer to the appropriate section of the manual for details (e.g. on C-Arm for finger trap).

3.5 Simulator Table Top (Carbon Fiber)



WARNING 36

Attaching accessories to the table top increases the risk of collision which could cause serious personal injury and/or damage to the equipment.

3.5.1 Design

The Simulator table top consists of a single segment board of carbon fiber with fixed accessory rails at one end.

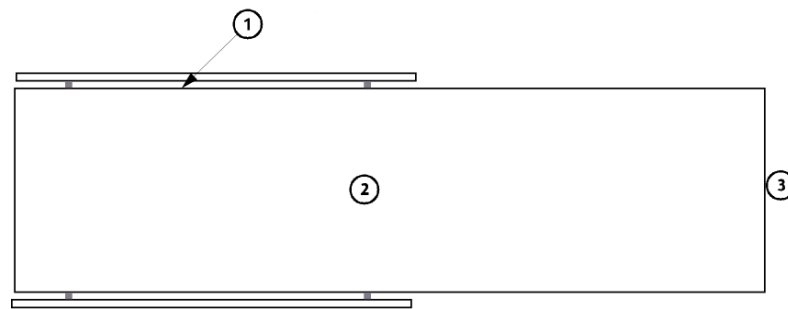
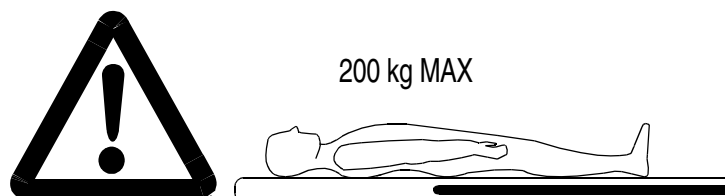
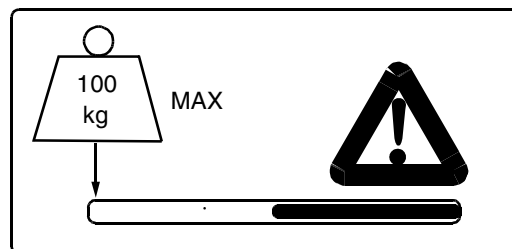


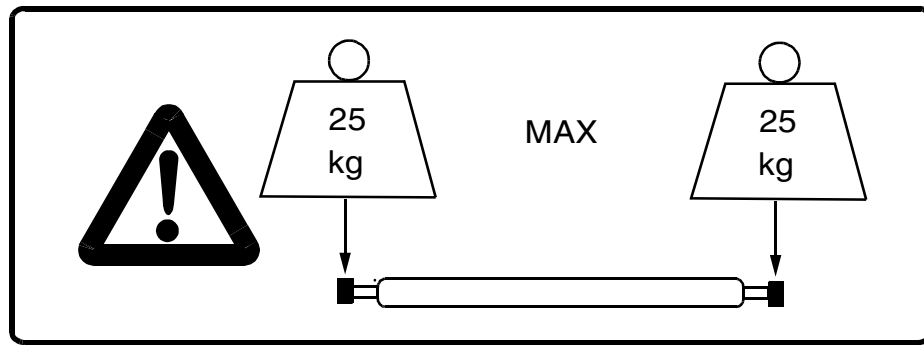
Figure 3.19 Simulator table top — design

- 1 Fixed accessory rail
- 2 Carbon fiber table
- 3 Gantry end

3.5.2 Warnings and labels

These warnings and labels are displayed on the Simulator table top.



**WARNING 37**

Failure to observe the maximum stated loading limits for accessories could cause injury to the patient and/or user and damage to the Precise Table.

Figure 3.20 Permissible Load on Accessory Rails

Loads which extend beyond the accessory rail must be reduced in proportion to the offset, to a maximum of 12.5 kg at 295 mm as shown in [Figure 3.21](#).

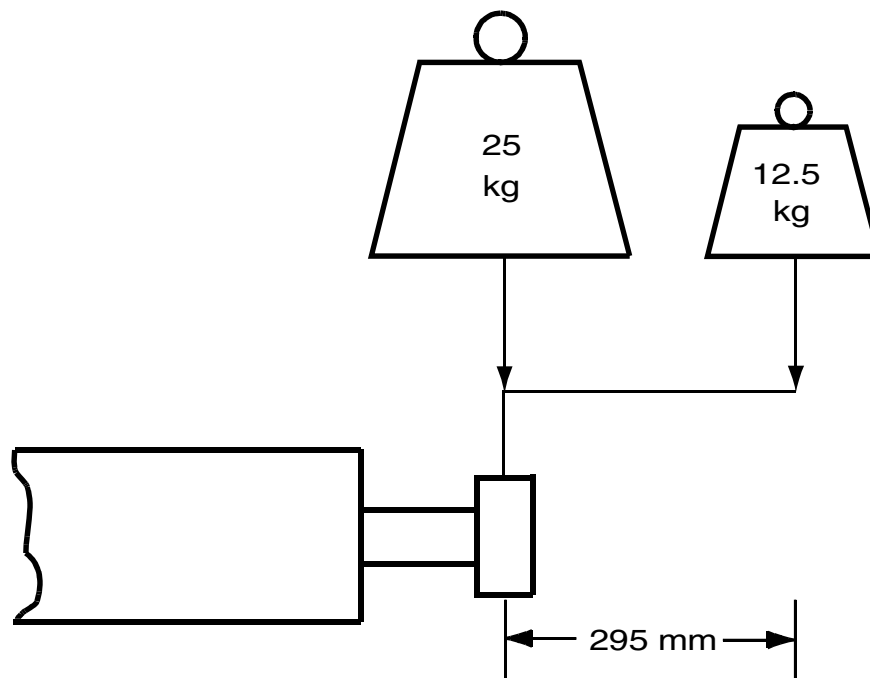
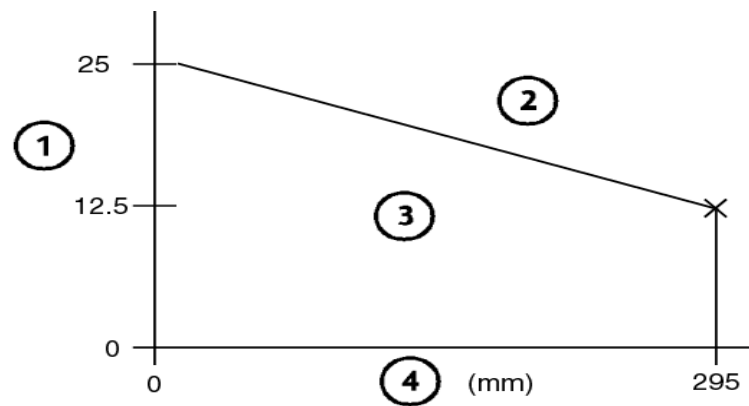


Figure 3.21 Offset Loading of Accessory Rails

Maximum permissible accessory rail loading shall not exceed the loads as stated in [Figure 3.22](#):



- | | | | |
|---|------------------------|---|--------------------------------|
| 1 | Rail loading (kg) | 3 | Safe loading |
| 2 | Untested region | 4 | Offset distance from rail (mm) |

Figure 3.22 Safe Loading

The Safe loading area (3) defined in [Figure 3.22](#) complies with IEC requirements.

The **Untested region** (2) defined in [Figure 3.22](#) **does not comply with IEC** requirements.

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4 Maintenance

Section	Title	Page
4.1	Environmental Conditions	4-2
4.2	Maintenance	4-3
4.3	Cleaning and Disinfecting	4-5

4.1 Environmental Conditions

Table 4.1 *Environmental conditions for operation*

Temperature	+10 °C to +40 °C
Humidity	20% to 70%
Atmospheric Pressure	700 mbar to 1100 mbar

4.2 Maintenance

Planned Maintenance & User Routine Checks

The Precise Table must be routinely checked and planned maintenance performed to keep the equipment operating safely, effectively and reliably.

4.2.1 Planned Maintenance

Responsibility

Planned maintenance may only be carried out by Elekta qualified and authorized service technicians. Elekta provide a full planned maintenance and repair service on both a call and contract basis.

Full details are available from your local Elekta[®] representative.

4.2.1.1 Planned Maintenance Programme

A summary of the planned maintenance programme is displayed in [Table 4.2](#).

Table 4.2 *Precise Table planned maintenance program*

Check	Description	Recommended Time Interval
Quality Assurance Checks	General technical checks Elekta recommend be performed by a suitably trained service technician and/or Physicist.	Daily
Planned Maintenance (PM) Checks	These are more involved technical checks, which Elekta recommend be performed only by an engineer approved by Elekta [®] .	Yearly

Further Information

For detailed information about planned maintenance, refer to documents 4513 370 1864, *Precise Table Planned Maintenance Manual* & 4513 370 1862, *Precise Table Corrective Maintenance Manual*.

4.2.2 User Routine Checks

Responsibility

It is the responsibility of the user to ensure that the recommended checks are carried out daily prior to using the Precise Table with a patient. The table top should always be visually inspected for signs of damage.

The following six items must be checked:

- 1 Touch Guards
- 2 Touch Guard Override
- 3 Movement Enables
- 4 Brake Movement
- 5 Stop Motors
- 6 Table Top Latch

1	Operate Head Ring Touch Guard of the linear accelerator	• Touch Guard Override Lamp is extinguished • Gantry cannot be rotated • No motorized table movements are available
2	Hold in <Touchguard Override> on user interface	• Lamp is illuminated • Motorized movements are available
3	Operate Movement Thumbwheels (while pressing <Movement Enable> bar) Release <Movement Enable> bar	• Each motorized table movement is available • No motorized table movements are available
4	Press each movement brake release button Press brake release button again	• Lamp is extinguished • Selected movement can be moved by hand • Inhibits "TABLE FREE" OR "T/T CLUTCH" are displayed • Lamp is illuminated • Selected movement cannot be moved by hand

5	Press red <Emergency Stop Motors> button on the user interface Turn <Emergency Stop Motors> button and press <Stop Motor Reset> button on the linear accelerator	• No motorized movements of table or linear accelerator are available • Motorized movements of table and linear accelerator are available
6	Release table latch by squeezing inner lever and pulling out until it latches into open position. Rotate table top back into position. Squeeze inner lever to release latch. Push table top latch firmly into closed position	• Table top is locked into position

4.3 Cleaning and Disinfecting

Cleaning and disinfection of the Precise Table may be required from time to time. This section provides general guidelines.



WARNING 38

Always isolate the Precise Table from the mains electrical supply before cleaning or disinfecting. Failure to observe this can result in electrical shock which can cause fatal or serious personal injury.



WARNING 39

The Precise Table must not be used in the presence of flammable or explosive gases or vapors, such as certain anaesthetic gases, or potentially flammable or explosive disinfecting sprays, since the resultant vapors could ignite. Use of electrical equipment in an environment for which it was not designed can cause fatal or serious personal injury and lead to fire or explosion.



CAUTION 5

Do not allow water or other liquids to enter the Precise Table as these may cause electrical short-circuits, metal corrosion or other damage to the equipment.

Cleaning and disinfecting techniques for both the equipment and the room shall comply with all applicable local laws and regulations which have the force of law within the jurisdiction.

4.3.1 **Cleaning - General**

Surfaces should be wiped with a mild detergent and then dried with a dry lint-free cloth. Never use corrosive cleaning agents, solvents, abrasive detergents or polishes. If not sure of the properties of a cleaning agent, do not use it.

To dry; rub down with a dry woollen cloth.

To preserve the chrome finish, use a non-abrasive wax

4.3.2 **Cleaning and Disinfection - Patient Contact Surfaces**

For all surfaces that come into contact with patients, Elekta recommends the following cleaning techniques:

- 1 Hand applied, water based detergent, with addition of a non-corrosive biocide (NOT chlorine bleach based) if required using a lint-free cloth.
- 2 Denatured alcohol (ethanol) lint free wipes.

To dry, rub down with a dry woollen cloth.

To preserve the chrome finish, use a non-abrasive wax.



As bodily fluids are particularly corrosive, the user must be specifically diligent in attending immediately to any faecal, urine, blood or vomit spillage. If bodily fluids are left unattended, damage can be caused to the equipment.

Cleaning and disinfecting techniques for the Precise Table must comply with all applicable laws and regulations which have the force of law within the jurisdiction(s) in which the equipment is located.

List of Warnings & Cautions

CAUTION 1	 1-4
	In the United States, Federal law restricts this device to sale, distribution, and use by or on order of a licensed physician.
WARNING 1	 1-5
	Changes, additions or maintenance to the equipment carried out by persons without appropriate qualifications and training and/or using unapproved spare parts may lead to fatal or serious personal injury and/or damage to the equipment as well as making the warranty void.
WARNING 2	 1-9
	If any part of the equipment is known or suspected to be defective or incorrectly adjusted, DO NOT USE the equipment until a repair has been made. Use with defective or incorrectly adjusted components or systems could expose the users and/or the patient to radiation and other safety hazards. This could lead to fatal or serious injury, or to clinical mistreatment.
WARNING 3	 1-10
	Never attempt to remove, modify or override any switches, interlocks, or other safety devices on this equipment. Interfering with such safety devices could lead to fatal or serious injury, or to clinical mistreatment.
WARNING 4	 1-10
	Do not remove covers or cables from this equipment unless expressly instructed to do so in this manual. High electrical voltages and moving parts are present within this equipment, and any contact with these components could lead to death or serious personal injury.
WARNING 5	 1-10
	Beware of live terminals even when the main three phase isolator is switched OFF. Voltages associated with the client's interface may still be present, and can cause fatal or serious personal injury.
WARNING 6	 1-10
	Be aware that the UPS may continue to power some circuits following an emergency power OFF or by any other means of the power being disconnected. This may cause a risk of electrocution when working on the machine which can lead to serious or fatal personal injury.
CAUTION 2	 1-11
	Always wear a wrist strap when handling printed circuit boards (PCBs) and other electronic subassemblies. The wrist strap/lead/engineer combination shall be tested prior to use. Failure to do so can lead to component failure.

-
- WARNING 7** 1-11
The Precise Table must not be used in the presence of flammable or explosive gases or vapors, such as certain anaesthetic gases, or potentially flammable or explosive disinfecting sprays, since the resultant vapors could ignite. Use of electrical equipment in an environment for which it was not designed can cause fatal or serious personal injury and lead to fire or explosion.
-
- WARNING 8** 1-11
Do not allow any radio-transmitting devices (such as diathermy units, mobile telephones, etc.) in the vicinity of Precise Table. Such devices could exceed EMC standards and in unusual circumstances could interfere with the correct functioning of Precise Table. In extreme cases this could lead to fatal or serious personal injury, clinical mistreatment, or damage to the equipment.
-
- CAUTION 3** 1-11
The use of cables and other components not specified or supplied by Elekta Limited may adversely affect EMC performance.
-
- WARNING 9** 1-12
Magnetic and/or electric fields which may be generated by this equipment, can have an adverse effect on certain cardiac pacemakers. Cardiac pacemakers can fail from radiation damage at doses as low as 10 Gy, and incur functional changes at doses as low as 2 Gy. This could lead to fatal or serious personal injury.
-
- WARNING 10** 1-12
Do not place cardiac pacemakers in a direct (unshielded) beam. Pacemaker function must be checked throughout the treatment. Failure to observe these precautions can lead to fatal or serious personal injury.
-
- WARNING 11** 1-12
Before handling parts of the machine in the area of the radiation beam path, check for induced radioactivity. Excessive exposure to radioactivity can constitute a health hazard.
-
- WARNING 12** 1-12
Before handling the flight tube, bending magnet, or any other components in their vicinity, check for induced radioactivity. Excessive exposure to induced radioactivity can constitute a health hazard.
-
- WARNING 13** 1-12
National and international laws and regulations for working with ionizing radiations must be observed when any such material is to be handled, transported (by air, sea, or land), and when disposal is considered. Failure to take proper precautions can constitute a health hazard and cause damage to the environment.
-

WARNING 14	 1-13	Do not stare into the laser beam. Exposure of the eyes to a laser beam can cause serious personal injury.
WARNING 15	 1-13	Incorrect handling or disposal of hazardous material may cause death, serious injury and environmental damage.
WARNING 16	 2-5	Make sure that persons, their clothing or objects cannot be trapped or damaged by the Precise Table as this can lead to personal injury.
WARNING 17	 2-5	Patients must only support themselves on the table top's surface. Using other parts of the Precise Table for support can cause injury to the patient and/or damage to the equipment.
WARNING 18	 2-7	If ASU is used to activate the gantry and table isocentric movements, then these movements occur simultaneously. The user is responsible for ensuring that collision does not occur, and should take additional care in these circumstances. Failure to do so can result in damage to the equipment and/or personal/patient injury.
WARNING 19	 2-8	When ASU is used to remotely position the Precise Table, Elekta recommend that the user checks all intended movements with the patient in the treatment position, before leaving the treatment room. Failure to observe this can lead to injury of the patient.
WARNING 20	 2-9	Before the patient sits on the Precise Table, the user must visually check that the Precise Table brake is ON. Failure to do so can result in personal injury and/or equipment damage.
WARNING 21	 2-10	Care must be taken when using the Touch Guard Override since this will remove touch guard protection allowing movements which could cause injury to the patient and/or damage to the equipment.
WARNING 22	 2-13	Care should taken when the covers are removed as high electrical voltages and moving parts are present within this equipment, and any contact with these components could lead to fatal or serious personal injury.

WARNING 23	 3-2
	Make sure that the table top is locked in position before use and always when a patient is on the table. The handle of the latch should be in the locked position. Do not unlock when loaded. Unlocking the table top when loaded can cause injury to the patient and/or user, and damage to the Precise Table.
WARNING 24	 3-2
	Overloading of the table top can cause damage to the equipment and/or serious injury to the user and/or patient.
WARNING 25	 3-4
	The Precise Table top lock lever mechanism is red on its upper surface. When the top lock is latched correctly in the closed position, the red colour should not be visible. Failure to correctly lock the Precise Table can cause injury to the patient.
WARNING 26	 3-4
	Attaching accessories to the table top increases the risk of collision which could cause serious personal injury and/or damage to the equipment.
WARNING 27	 3-4
	When moving the table top in the longitudinal direction, take care not to trap fingers or any other body parts between table top and support base. Failure to observe this can cause personal injury.
WARNING 28	 3-5
	Make sure the table top is latched correctly prior to positioning a patient and the movement brakes are ON before treatment commences. Failure to do so can result in injury to the patient.
WARNING 29	 3-6
	Failure to observe the maximum stated loading limits for accessories could cause injury to the patient and/or user and damage to the Precise Table.
WARNING 30	 3-8
	Failure to observe the maximum stated loading limits for accessories may cause injury to the patient and/or user, and damage to the Precise Table.
CAUTION 4	 3-10
	Do not allow patients to use C-Arms as support when getting on or off the Precise Table. Using the C-Arm as a support can cause damage to the equipment.

WARNING 31	 3-10
	Make sure that the C-Arms are in their center or outward position before moving the Precise Table longitudinally. Failure to observe this can cause fingers or other body parts to be trapped leading to personal injury and/or damage to the equipment.
WARNING 32	 3-10
	The user should be aware that when moving the C-Arms into a vertical position, it is possible to trap their fingers or other body parts between the C-Arms and the control panel. Failure to observe this can lead to personal injury.
WARNING 33	 3-11
	The headboard/footboard extension panel is designed to support the patients head or feet during treatment. Maximum weight at the end of the table with the headboard/footboard fitted: 10 kg uniformly distributed. Overloading of the headboard/footboard could cause fatal or other serious personal injury and/or damage to the equipment.
WARNING 34	 3-11
	When fitting the headboard/footboard to the table top, take care to avoid collisions. Failure to observe this can lead to equipment damage and/or injury to the patient.
WARNING 35	 3-15
	Before attaching accessories, make sure that the rail is secure. Failure to do so can result in accessories falling causing injury to the patient and/or user.
WARNING 36	 3-17
	Attaching accessories to the table top increases the risk of collision which could cause serious personal injury and/or damage to the equipment.
WARNING 37	 3-18
	Failure to observe the maximum stated loading limits for accessories could cause injury to the patient and/or user and damage to the Precise Table.
WARNING 38	 4-5
	Always isolate the Precise Table from the mains electrical supply before cleaning or disinfecting. Failure to observe this can result in electrical shock which can cause fatal or serious personal injury.

- WARNING 39** 4-5
The Precise Table must not be used in the presence of flammable or explosive gases or vapors, such as certain anaesthetic gases, or potentially flammable or explosive disinfecting sprays, since the resultant vapors could ignite. Use of electrical equipment in an environment for which it was not designed can cause fatal or serious personal injury and lead to fire or explosion.
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- CAUTION 5** 4-5
Do not allow water or other liquids to enter the Precise Table as these may cause electrical short-circuits, metal corrosion or other damage to the equipment.
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- CAUTION 6** 4-6
As bodily fluids are particularly corrosive, the user must be specifically diligent in attending immediately to any faecal, urine, blood or vomit spillage. If bodily fluids are left unattended, damage can be caused to the equipment.
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